

Warm & Dry: a modified open-top chamber for seed ecology research

Jerónimo Vázquez-Ramírez^{1*} and Susanna E. Venn¹

¹Centre for Integrative Ecology, School of Life and Environmental Sciences, Deakin University, 221 Burwood Hwy, Burwood, VIC 3125, Australia

*Email for correspondence: ivazquezramirez@deakin.edu.au

This open-top chamber is designed to create a warmer and drier microclimate in the organic and topsoil layers.

Materials needed for construction

- 1 flexible polycarbonate sheet (88.6 x 172.2 cm, 0.8 thick)
- 1.2 m of 10 cm height garden edging
- 4 garden edging pegs
- Heavy duty clear tape or 3 flat head screws
- 1 threaded rod
- 2 wing nuts for the threaded rod
- 4 tent pegs

Tools needed during construction

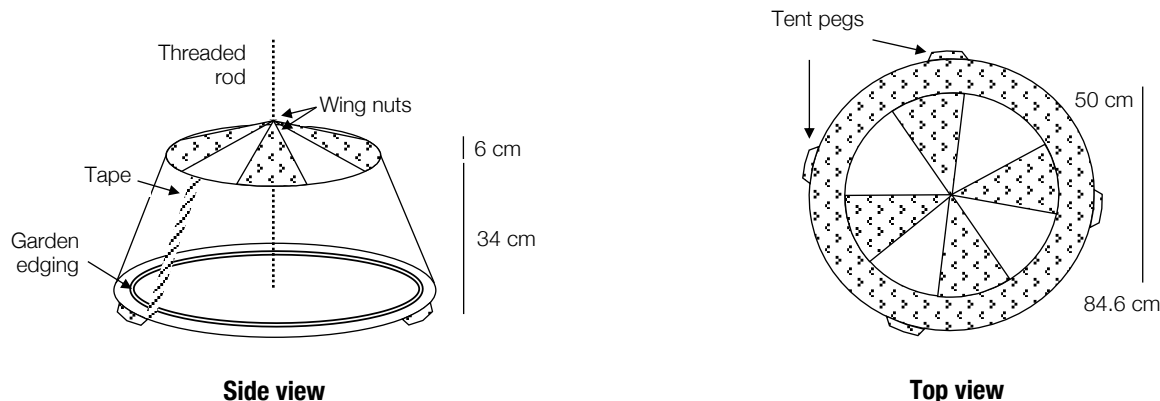
- Heavy duty scissors
- Marker
- Protractor
- Large compass
- Large ruler

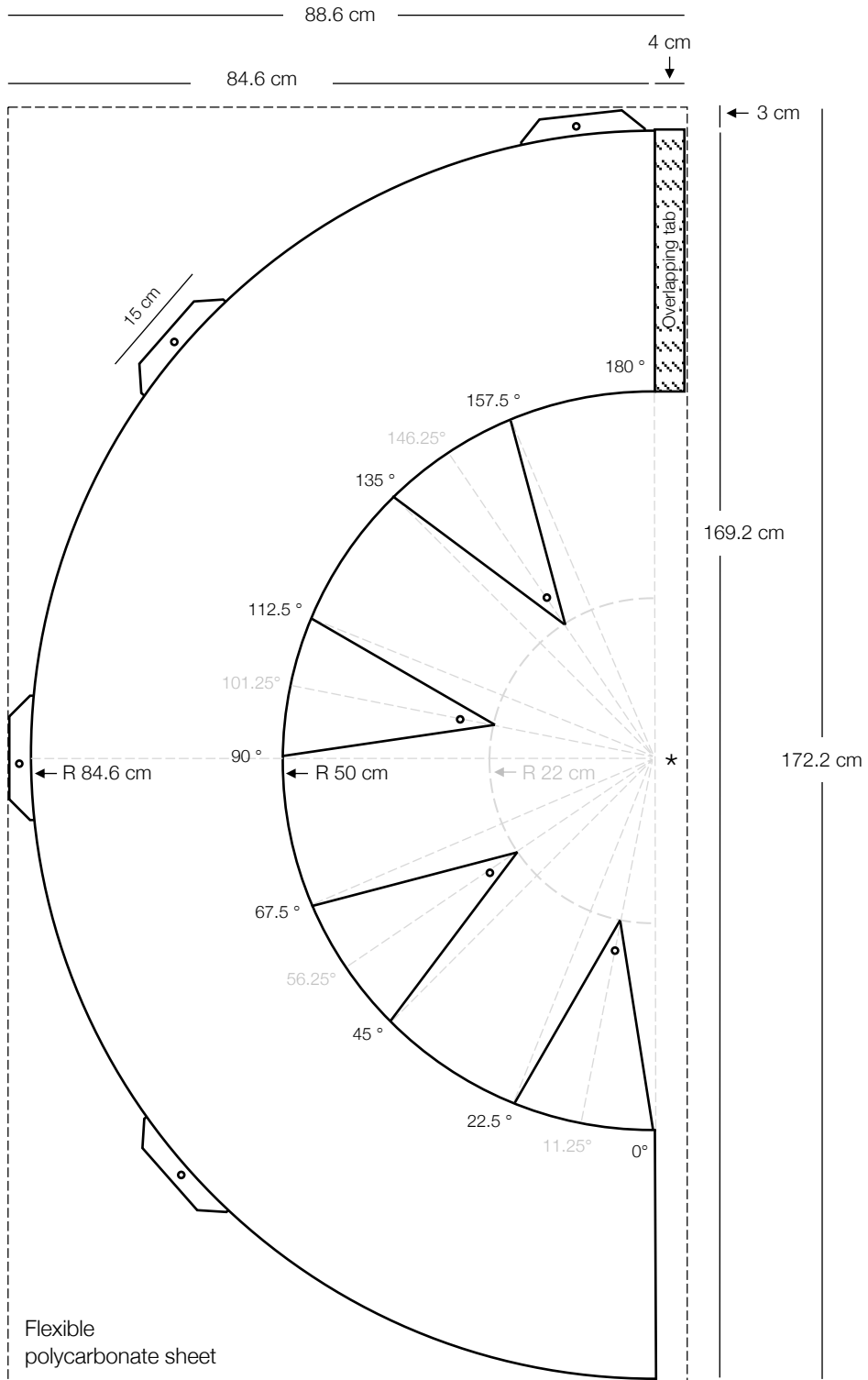
Instructions for construction (see Side 2 for design plans)

1. With the compass draw three half circles with a radius of 22, 50 and 84.6 cm in the polycarbonate sheet.
2. Using the protractor and a long ruler, draw 12 temporary lines from the origin (*) up to the 50 cm radio half-circle in the direction of the indicated angles.
3. Draw the rain-out structures (triangles) between the 22 and 50 cm radio half-circles using the draw lines as reference.
4. Draw the overlapping tap and the base appendixes.
5. Cut with heavy-duty scissors following outline lines.
6. Make circular holes in appendixes and rain-out structures (0.5 cm diameter).

In the field:

1. Transport the chambers to the study site (unfolded).
2. Establish the garden edging around the selected plots (10 cm below the soil surface). Use pegs to fix it to the ground.
3. Fold the chambers and hold both sides using heavy-duty tape or the three flat head screws.
4. Insert the threaded rod through the rain-out structure holes. Then, insert two wing nuts: one on top and one on the bottom of the structures.
5. Bury 1/3 part of the threaded rod into the ground. Another 1/3 part is inside the chamber and the last 1/3 is outside on top of the chamber.
6. Insert pegs in the base appendixes to fix the chamber to the ground.
7. Adjust the rain-out structures to a 30-35 degree inclination moving the wing nuts.
8. Finally, trim the vegetation located between the garden edge and the chamber to avoid condensation in the chamber walls during the mornings.





Covered area by rain-out structures can be easily modified. Change given angles to

- 50%: 0°, 11.25°, 22.5° - 45°, 56.25°, 67.5° - 90°, 101.25°, 112.5° - 135°, 146.25°, 157.5°
- 40%: 0°, 9°, 18° - 45°, 54°, 63° - 90°, 99°, 108° - 135°, 144°, 153°
- 30%: 0°, 6.75°, 13.5° - 45°, 51.65°, 58.5° - 90°, 96.75°, 103.5° - 135°, 141.75°, 148.5°
- 20%: 0°, 4.5°, 9° - 45°, 49.5°, 54° - 90°, 94.5°, 99° - 135°, 139.5°, 144°